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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,448	04/04/2006	Guofu Zhou	NL 031175	9649

24737 7590 07/20/2010
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
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EXAMINER	
LAM, VINH TANG	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
07/20/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,448	ZHOU ET AL.	
	Examiner	Art Unit	
	VINH LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 May 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *4-17 and 19-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/25/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **1-3** and **18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Loxley et al. (US Patent No. 6262833)** in view of **Sato (US Patent No. US 4041481)** and further in view of **Sterling et al. (US Pub. No. 2004/0231987)**.

Regarding Claim **1**, (Currently amended) **Loxley et al.** teach a display device having at least one picture element having an optical switch comprising at least one first fluid *(Col. **2**, Ln. **54**)* and a second fluid *(Col. **2**, Ln. **54**-**55**)* immiscible with each other above a first support plate *(Col. **2**, Ln. **38**-**40**, Ln. **50**-**54**)*, display device has driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states of the picture element *(Col. **1**, Ln. **58**-**62**)* between and including a first extreme state and a second extreme state *(Col. **1**, Ln. **66**-**67**, Col. **2**, Ln. **1**-**4**, FIG. **1**)*.

However, **Loxley et al.** do not teach the driving means providing variable voltages prior to applying a fixed voltage, wherein the variable voltages comprise alternating voltages.

In the same field of endeavor, **Sato** teaches the driving means providing during selection *(FIGs. **7G-7I**, i.e. T_E-T_{Xn} periods because it is obvious that the cells must be selected for erasing and writing images)* of a picture element *(FIG. **7G**, i.e. **C11**)* variable voltages *(Col. **7**, Ln. **19-21**, FIG. **7G** or FIG. **6B**, i.e. **erase pulses** during T_E)* to the picture element prior to applying a fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp)* to the display device, the fixed voltage being associated with an electro-optical state *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp would obviously produce an electro-optical state)* of the picture element that corresponds to a desired image grayscale to be set *(FIG. **7G**, i.e. **0V** during T_p would obviously produce a desired image grayscale of **C11**)*,

wherein the variable voltages are selected *(Col. **7**, Ln. **19-21**, FIG. **7G** or FIG. **6B**, i.e. **erase pulses** during T_E to selected pixels)* mean voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V**)* substantially equal to the fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V**)* that is associated with the electro-optical state *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp would obviously produce an electro-optical state)* of the picture element *(FIG. **7G**, i.e. **C11**)* that corresponds to a desired image grayscale *(FIG. **7G**, i.e. **0V** during T_p would obviously produce a desired image grayscale of **C11**)*.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** teaching of a display device having picture element having, driving means, and range of electro-optical states with **Sato** teaching of driving means providing variable voltages prior to applying a fixed voltage to

the display device *to enhance the image quality by eliminating the cross effect of the display*.

Loxley et al. and **Sato** teach the above display device and driving means.

However, **Loxley et al.** and **Sato** do not teach that the second fluid being electro-conductive or polar.

In the same field of endeavor, **Sterling et al.** teach the second fluid being electro-conductive or polar ***([0075]**, FIG. **16B**, i.e. **118a**).*

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** and **Sato** teaching of a display device structures and the driving means having variable voltages with **Sterling et al.** teaching of the second fluid being electro-conductive or polar *to substantially reduce the cost, parts (i.e. polar particles), and simplifying the design and/or manufacturing process*.

Regarding Claim **2,** (Currently amended) the display device according to claim 1, wherein **Loxley et al.** teach the first support plate is a first transparent support plate, the display comprising the first and second the fluids within a space between the first transparent support plate and a second support plate *(Col. **5**, Ln. **58-68**, Col. **6**, Ln. **1-12**, FIG. **1**).*

Regarding Claim **3,** (Currently amended) the display device according to claim 1, wherein **Sato** teaches the variable voltages comprise a set of alternating voltages *(Col. **7**, Ln. **19-21**, FIGs. **7G-7I**, i.e. **erase pulses** during T_E).*

Regarding Claim **18**, (Previously presented) the display device according to claim 1, wherein **Loxley et al.** teach the variable voltage includes one of the first and second extreme states *(Col. **5**, Ln. **44-68**, Col. **6**, Ln. **1-12**, FIGs. **1 & 2**).*

Response to Arguments/Amendments/Remarks

2. Claims **21** and **22** are *withdrawn* because they are drawn to Non-Elected Species 3 (Fig. 5) and Species 4 (Fig. 6) respectively, filed 08/20/2008.

3. Claims **23** and **24** are *withdrawn* because they are drawn to Non-Elected Species (Fig. 4) and (Fig. 9) respectively, filed 08/20/2008.

4. Claims **4-6** and **8-14** are withdrawn.

5. Claims **7** and **15-20** are canceled.

6. Applicant's arguments filed 05/24/2010 have been fully considered but they are not persuasive.

Applicant argues that ***Sato's** variable voltages applied during the erase period T_E are not variable voltages that correspond to the fixed data voltage nor selected having a mean voltage substantially equal to the fixed voltage*. However, the Examiner respectfully disagrees because:

a. The variable voltages applied during the erase period T_E are variable voltages *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **± 3V**)* that correspond to the fixed data voltage and are selected having a mean voltage substantially equal to the fixed voltage *(Col. **7**, Ln. **40-58**, FIG. **7G**, i.e. **0V** during Tp).*

b. The variable voltages applied during the erase period T_E are variable voltages that corresponding to selected pixels for erasing. Please refer to the above rejection for detail.

c. **Sato's** variable voltages applied during the erase period T_E are identical to **applicant's** pre-pulse 31 (Page 4, Ln. 22-27, Fig. 3) and are used to improve accuracy and stability of gray levels.

Conclusion

The prior art(s) made of record and not relied upon (is)/are considered pertinent to applicant's disclosure: Zehner; Robert W. et al. (US Patent No. 7012600).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629